

Amendments to the Claims

Please cancel claims 2, 6-9, and 14-52, amend claims 1 and 54, and add new claims 56-59, in conformance with the Marked-Up Copy of All Pending Claims that follows. This listing of claims replaces all prior versions and listings of claims in the application.

Marked-Up Copy of All Pending Claims

1. (Amended) A method of treating a waste stream, the method comprising the steps of:
 - a. conducting at least a portion of the waste stream to a treatment vessel for treatment comprising contact with a first biological population having a first-biological population profile;
 - b. drawing off a portion of the waste stream to an off-line treatment area;
 - c. controlling the drawn-off portion of the waste stream so as to maintain, in the drawn-off portion, a second biological population having a second-biological population profile different from the first-biological population profile, whereby the second-biological population profile is customized to provide a particular biological profile; and
 - d. returning a fraction of the drawn-off portion to the treatment vessel following contact with the second biological population, the returned fraction including a portion of the second biological population.
2. (Cancelled)
3. The method of claim 1 wherein the second biological population includes a higher proportion of facultative aerobes than the first biological population.

4. The method of claim 1 wherein the second biological population includes a higher proportion of facultative anaerobes than the first biological population.

5. The method of claim 1 wherein the second biological population includes a higher proportion of nitrifiers than the first biological population.

6-9. (Cancelled)

10. The method of claim 1 wherein the returned fraction contains a higher level of nitrates than the waste stream.

11. The method of claim 1 wherein control of the drawn-off portion is effected through maintenance of a target ORP range.

12. The method of claim 1 wherein control of the drawn-off portion is effected through maintenance of a target specific oxygen uptake rate range.

13. The method of claim 1 wherein control of the drawn-off portion is effected through maintenance of a target specific nitrate uptake rate range.

14-52. (Cancelled)

53. The method of claim 1 wherein the treatment vessel contains disposable solids, introducing the returned fraction to the treatment vessel causing the disposable solids to decrease in nutrient content.

54. (Amended) An apparatus for treating a waste stream in a controlled growing environment, comprising:

- a. a first treatment vessel;
- b. means for conducting at least a portion of the waste stream to the first treatment vessel for treatment comprising contact with a first biology population having a first-biology population profile;
- c. means for drawing off a portion of the waste stream prior to introduction into the first treatment vessel;
- d. an off-line treatment area comprising a second treatment vessel for receiving the drawn-off portion of the waste stream;
- e. means for controlling the drawn-off portion of the waste stream so as to maintain, in the second treatment vessel, a second biology population having a second-biology population profile different from the first-biology population profile, whereby the second biology population is customized to provide a particular biological profile for return to the first treatment vessel; and
- f. means for conducting a fraction of the drawn-off portion from the second treatment vessel to the first treatment vessel following contact with the second biology population, the returned fraction including a portion of the second biology population.

55. The apparatus of claim 54 further comprising an overflow weir of variable height.

56. (New) The method of claim 1 wherein the second-biological population profile is customized using a sequencing of growth conditions.

57. (New) The method of claim 56 wherein the sequencing of growth conditions includes mixing the waste stream with activated sludge followed by one or more of controlled mixing, air exposure, residence time, and settling sequences.

58. (New) The apparatus of claim 54 whereby the second biology population is customized using a sequencing of growth conditions.

59. (New) The apparatus of claim 58 wherein the sequencing of growth conditions includes mixing the waste stream with activated sludge followed by one or more of controlled mixing, air exposure, residence time, and settling sequences.